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BULLETIN OF THE WISCONSIN STATE
BOARD OF INDUSTRIAL EDUCATION

NO. 6

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PUBLIC SCHOOL MANUAL ARTS AN AGENCY FOR VOCATIONAL EDUCATION

BY

F. D. CRAWSHAW

Professor of Manual Arts, The University of Wisconsin

MADISON
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Manual Arts

Public School Manual Arts an Agency for Vocational Education*

Some experiments which have been made in recent years to provide for better equipped industrial workers have seemed to indicate that little account has been taken of manual training in the public schools—this training to be so organized as to accomplish in part at least the desired results.

Unquestionably the trade school, the special industrial school, and the continuation school are each and all a means to the desired end. It is a question, however, whether our present public school organization may not do much that it is not now doing to aid in the industrial education movement.

Admitting, if we can, that the schools are not fulfilling their obligation to society in this respect, and that manual training teachers are shareholders with their brother teachers concerned in more purely academic subjects in helping to solve the problem of industrial education, what can they do to change their methods?

The Present Facilities

Already we have in public school manual arts departments from four to eight shops equipped for wood and metal work. We have drawing rooms to provide for three kinds of mechanical drawing and as many kinds of freehand drawing. We have science laboratories for practically all the sciences that are taught. If now we should provide an equipment for some of the special industries of the community, such for example as pottery, printing, and

*Paper read before the Wisconsin Association of City Superintendents and Supervising Principals at Milwaukee, Wisconsin, March 29, 1912, and printed by the State Board of Industrial Education at the request of the Association.

weaving, and modify the courses in the shops already provided, by giving the courses of study conducted in them a strong industrial tendency, we might be able to meet any reasonable demands thus far made for industrial education. The transformation, then, of the present public high school, would mean a comparatively small expenditure of money. The maintenance of such a school would be slightly greater than that of the large high schools at present equipped for a variety of work. The difference in this particular, however, would not be great. It really is not a question of first expense or of the expense of maintenance: it is a question of purpose. We can do the thing that we set out to do if we are all agreed upon a particular plan.

It is not necessary for us at this time to consider definitely the *kind* of manual arts work to be done in the reorganized schools. Let us hope, however, that it may be such as to retain all of the valuable elements in our present day manual training work, and to embody also such fundamental principles of industries as to make it possible for a boy, when leaving school either before graduation or at the time of graduation from the grade school or high school, to "make good." There are many things of actual industrial value which manual training teachers might agree upon as satisfactory to teach even in the upper grades if they viewed their subject from the standpoint of our present day ideals, both educational and industrial.

The Results to Expect from Proper Adjustment of Present Courses

It is believed, therefore, that some of the results of a modified course, such as the one just suggested, would be these:—

First, to control under a single management the whole of a boy's education *in school.*

Second, to educate for the industries rather than to *train* for them.

Third, to enrich the industries by sending into them young men who have had some *special* preparation for a *particular* occupation.

Fourth, to emphasize skill, technique, and workmanship by the employment of industrial standards.

Fifth, to prepare young people for the actual work of life while they are being given all of the refining and uplifting influences which the non-vocational studies provide.

Sixth, to develop a system which is not at all times preparing for something far ahead. At whatever point the boy might leave school he would be prepared to do what is one of the hardest things for any of us to do; namely, to adjust himself to present conditions. Such an adjustment may be made when he appreciates the relation between the means and the ends in life; and it is with reference to this relation that the course of study in our new schools must be designed.

Regarding the limitations for industrial education, if the plan outlined is followed, three may be presented.

(1) The boy's age. We cannot expect a boy of fourteen or fifteen to do a man's full work no matter what his preparation for a man's work may be. The schools can never turn him out at the end of a common school period as an A No. 1 industrial workman.

(2) His natural rights. America is a democracy; and while it may be true that the boys of to-day, may fifty years from now be doing much the same thing that their fathers are at present doing, still we cannot say this of any particular one of them. We owe every normal individual a chance to reach one goal—that which the best equipped individual in the community may one day reach. He and not we, by the natural law of selection and rejection, must find his place. Our part is to provide a means whereby each individual may find the work for which he is best fitted, and prepare to do that work with the greatest degree of success.

(3) His natural abilities. Believe what we may regarding our being born into this world as equals, we know that our present and future environment limit our possibilities. No matter what form of industrial education is attempted, may it be true that no one is attracted to it and held by it who would lead a happier and a more useful life if he followed some other course!

The Ends to be Sought

What I wish you to consider, then, is industrial education—not industrial training; the parallel course of study which means vocational and non-vocational opportunities for all; the unified system which economizes time, space, and money for the boy and for the community of which he is a part; the universal education which means an industrial efficiency as well as a social efficiency, which gives hope to every individual for something better, but which for every station in life gives the satisfaction that can come only when one feels that he possesses a reserve power which is the

result of broadening rather than narrowing influences. My contention is that it is the public school—the school which offers the maximum of opportunities for all—which can best and most effectively bring these returns.

A Strong Vocational Bearing Necessary

Enough has been said thus far to suggest two things:—

1st. That the manual arts in all the grades of school work may, and probably should, keep in touch with vocational and especially industrial activities.

2nd. That in all grades above those ordinarily called elementary the manual arts must have, if they are to serve their full purpose, a strong vocational bearing.

In any form of educational work, even in that which is designed for those who did not receive the advantages of an early school training, it is still considered good practice to lay a general foundation for future work by considering fundamental principles. In the teaching of the manual arts we would naturally consider the elementary grades the place in the school process where material should be handled with regard to a general development rather than as a means to some specific end. It is in these grades, then, that the manual arts should be taught less as a subject and more as a process, or as a means to a general educational end. Manual training, then, is a term which can best be used when speaking of the manual arts as taught in the elementary school period.

It is assumed that the modern school methods for this period do not consider any one of the many school subjects in a formal manner. Number work, for example, in the first two or three grades, is no longer taught in the abstract. Indeed it is not taught as concrete number work even. Facts concerning numbers are learned by the first and second grade children by means of association. This example suggests that all educational material in these grades is used in the bulk rather than in parts. The little child absorbs, as it were, a certain amount of information concerning many things which later on in its progress he knows as arithmetic, language, geography, history, or any one of the subdivisions into which educational material is divided.

Acting upon the same general plan in teaching construction work (a name given to the manual arts in the lower grades) we would use materials in the early grade hand work, whenever they might serve the purpose of broadening the educational horizon of the child better than any other available means.

What then is manual training according to such standards? First and foremost, it is a course in handwork dealing with elementary industrial processes which have a place in present industrial life, have had a place in the past, and probably will have in the future. Such a course, from the standpoint of educational theory, will be recognized as serviceable and practical for actual school room conditions, because it will allow and demand a correlation with geography, history, language, reading, and arithmetic. It will be practical from the standpoint of the community, because it will teach the child the elements of the occupations followed by members of the community.

The Industrial Emphasis in the Elementary Grades

Just one specific illustration now to show how the early grade manual training may serve as a preliminary step in industrial education.

The supervisor selects a material to be used in a certain grade because it is a suitable one in the community in which the school is placed, and because experience has shown that it may be used successfully by children of the age found in that grade.

He plans his course so far as the tool exercises or methods of manipulation are concerned, but he does not decide upon the particular thing to be made by each pupil. He leaves that to the good judgement of the class teacher and the desires of the individual pupils. The classes meet and begin work with the understanding that certain things must be learned before they can do well what they wish to do, and with the further understanding that when the proper time comes they will be permitted to work out their individual plans. Each pupil learns to handle both material and tools in exercises which may or may not have a value in themselves when completed. While this is being done, the language, geography, history, and arithmetic are incidentally used to show the child what can be done in his manual work. When this elementary work is completed, each child uses his new knowledge and new power in developing his own individual project under the supervision of his teacher. Now what is the result of this kind of manual training? Certainly this: Good habits of thought and action are formed. Proper methods of working with tools are learned. An interest in the thing being done is kept, and results which are worthy of the effort put forth are secured. Self-reliance and individuality are developed. The pupil becomes both a

rational thinker and a careful doer. By such results, practical and educational manual training may be tested upon the basis of its having an industrial significance.

While it is true that the emphasis upon the manual arts is at the present time in the direction of the industrial, it is quite as true that the older emphasis, viz., that of its educational and cultural value, should continue to be prominent. There must be a time when the general is considered rather than the special—when a superstructure must be laid for future building. Such a time in the teaching of the manual arts is found in the first three or four years of the child's school life. Here is the place, then, for breadth rather than narrowness.

We are becoming more and more convinced because of the industrial temper of our people and because of the economic necessities which force children out of school as soon as the state will permit them to go, that the vocational emphasis in school work must begin early enough to prepare those who are thus affected for such a contingency. Much as we may wish to hold children in school until they are physically, mentally, and morally capable of battling with life's problems, we must recognize, by the overwhelming evidence furnished by the number of children who leave school before they reach the high school, that we cannot do this for all. The ever increasing large number who drop out of school during the period between fourteen and sixteen years of age seems to establish the fact that if the school is to help them in any way directly to perform the constructive duties of life it must in the grammar grades do a pre-vocational work and, if possible, create an industrial intelligence.

Vocational Guidance

The work of helping a pupil to realize his individual ability and responsibility is that part of the teacher's work for which he is not specifically paid but for which he is none the less responsible. It is the part which will go far toward solving many of the perplexing problems surrounding the school room and particularly those which may be classed under the head of "Vocational Guidance" about which Mr. Meyer Bloomfield has so effectively written in his little book, "The Vocational Guidance of Youth."

Many of the things which may be called traditional in the manual arts work should be done during this second period—the grammar grade period—in one's school life. We must not con-

clude because our attention has been drawn so forcibly to the need for vocational education in this period that it is only this form of education that is needed. Neither should we conclude that all the manual arts in grades five to eight inclusive should be given a decided vocational turn for all pupils. We shall continue to have in the school those, even though they are in the minority, who are destined to continue in the school system through the high school and into or through the university. As Dr. Münsterberg has told us, it is from this class that we may expect to secure the future men of remarkable ability in the fields of science and letters. For them, then, much attention should be given to their prospective work as students along the professional lines. The manual arts work for such should continue to be founded primarily upon the manual training process leading toward cultural and generally educational ends. Either the formal manual training of the past will suffice for them, or else the newer vocational manual arts must contain elements which will make it developmental for one class as well as another. If these good qualities may be possessed by the vocational manual arts they may well replace the former type which now so often are classed as dilettante.

Then, too, the administration of the manual arts work in the grammar grades will be simple; for both the children who will continue in school work and those who will soon leave school may profit by such manual arts. The former will receive the benefit which comes from the more versatile use of all of one's faculties, as will also the latter class, to be sure; but these will also secure the special training which will prepare them for a particular vocation, perhaps an industry. The expression, "prepare them," is used because as Dr. L. D. Harvey of Stout Institute, has said, "The schools do not give complete preparation for the work of life. Neither can they give complete preparation for the making of a living; but they should give that which may be regarded as a part of the necessary preparation for earning a living, which can be given through systematic instruction in the schools better than elsewhere. Although this preparation may be inadequate, it should be a beginning, at least, of the complete preparation desired."

Two Alternatives in the Grammar Grades

There are two alternatives in the grammar grades: first, to provide two kinds of manual arts work for the pupils, and, second: to provide one—the vocational form—and administer it so that it may

be equally beneficial to all, but in different ways. The latter is the more acceptable, both from an economic and an educational point of view.

To suggest now the possible means of providing specifically for the class of children who in all probability will not enter high school, and who when they leave the grammar grades, if cared for in school as they have been in the past, will enter the nonproductive or so-called "blind alley" occupations, the following examples are given:

1. In the large city where there may be in any one section a sufficient number whose future occupation can be determined with some considerable degree of certainty—such determination being made by conferences between parent, teacher, and child—there may be established a vocational school. In Indianapolis, for example, there are several schools in which the manual arts work is typical of some particular community activity which furnishes a livelihood for the adult population. Such occupations in these schools are tinsmithing, sign painting, shoe repairing, and clothes cleaning and pressing. Together with this manual work there is a line of regular school work carried on, but always conducted in such a manner that if at any time a pupil chooses to continue in school even on into the high school he may do so with little or no loss of time.

It would not be possible always, especially in the city of moderate size, to establish *special* schools, but in such communities there could be operated within a regular school a department which would provide for the vocational manual arts work. In the regular academic work also there could be a division or a class whose work would be of the applied kind particularly designed to fit individuals for a vocational use of their book knowledge in their occupation. In a sense, such a division or class would be conducted somewhat the same as the "ungraded" classes are in many cities at the present time. If a special instructor could not be provided for such a group, at least some regular instructor could be found whose sympathies and understanding of the needs of the group would enable him soon to carry on the work of the group in a satisfactory manner. This would be true for the manual arts work and for the other school work as well. Of course under this plan, as in the first one mentioned, the academic work done should permit an individual to proceed into high school work as though he had followed the course of more complete preparation for such advance-

ment. In the small town it would not be possible always to secure a sufficient number of pupils to form a vocational department, but always, with the proper incentive, some special attention could be given to those whose demands meant a special rather than a general training. A good example of what may be done under these circumstances is given in the work which is being carried on in Neenah, Wisconsin, under the supervision of Mr. Newton Van Dalsem of the manual arts department, and Superintendent E. M. Beman. Here boys are permitted upon a competition basis in their regular school work to spend a half day or more in the manual arts department. Thus it is possible for most if not all boys of normal ability to undertake a work along any one of several lines which approaches closely to actual industrial or trade conditions.

The Intermediate Grade Vocational Needs

Something must be done for those boys and girls in the sixth, seventh, and eighth grades who cannot, or probably will not, continue long in school, and who, therefore, must go to work, because of circumstances resulting from conditions—financial, physical, mental, or moral—due either to heredity or environment. This something is to teach them the elements of business or trades. The chances are that this class of children will labor in their home community; therefore, the activity of the community should be their activity. This community activity must be brought into the school or else those governing this activity must coöperate with the school by permitting children to work in the community shops, factories, or business houses for part time. This idea is already being worked out in many places. Who can say that it cannot be carried lower down in the school process? Would it not be better to hold boys to practical arithmetic, language, geography, and history work for a half day, and know that they were spending the other half in work which they will in all probability follow for the remainder of their lives, than to lose them from the school influence entirely, and know that they were becoming lifelong automatons in a factory system?

Again I quote from Dr. L. D. Harvey: "In order to secure the facilities for industrial education which existing conditions seem to demand, the work in the elementary and secondary schools must be modified through an extension of the manual work now being carried on in a large number of schools, and yet in the aggre-

gate, which reaches in any effective way, comparatively few. If, through these schools there is to be a direct contribution to the field of industrial education, the work in manual training must be organized with that end in view; not with the distinct purpose of teaching trades or of giving a limited line of training in a single process to the point where a high degree of skill is developed. This is not necessary, indeed, in order to make the elementary schools a very important factor in industrial education.

"The largest opportunity for reaching the greatest number who need training for skill in workmanship and for making progress in the development of that skill, lies in the modification of the courses of study in the elementary and secondary schools, by making provision for a much more extended line of manual training work than is now offered, open to all, running from the kindergarten through the high school. We have in existence the organization for carrying on this work. It may be so given as to bear a direct and helpful relation to the other work of the schools, reënforcing and strengthening that work."

Suggested Possibilities for Grammar Grade Adjustment

Summing up the points I have attempted to make regarding grammar grade manual arts, let me suggest these for your careful consideration:—

1. Define for yourself and for your constituency what manual training should be and do.

2. Consider carefully its possibilities for preparing pupils for industrial work without narrowing their outlook on life or shortening their preparation for it.

3. Regard manual training as a means of expression which shall have, as a motor development subject in the curriculum, both cultural and utilitarian value.

4. Select material for work which is easily available and which has a local significance, or which is of general use in the trades.

5. Use material in a well developed sequential plan of work running through consecutive grades. Make the projects progressive and of practical value for each grade, taxing to some extent the ability of the average student in the class.

6. Regard the manual arts department as a legitimate place for industrial education, and for those who will go into industrial work before entering the high school; provide special facilities by extending the present equipment rather than providing a new one in a new school.

The Problem of the High School

In the high school as in the grammar grades there are found the children who are seeking information for immediate economic ends and those also who aspire to become college and university students. The problem, then, of educating in the public high school those who may be found there is not much different in its inherent elements from the similar problem for the grades just discussed.

In the methods to be followed and in the ends to be sought, the problem is somewhat different. To begin with, we must give consideration to two important facts, viz:

First: The great majority of those who complete a high school course of study immediately thereafter enter upon the work of some wage earning position.

Second: Few if any of those who enter high school know at the time of entrance what their future work is to be.

The high school course of study must be constructed upon such broad lines that it will serve as a means of determining for each boy and girl what he or she can best afford to do as a life work. It must also be designed to place at the command of those, who are directing the great commercial and industrial interests of the world, individuals who are prepared for immediate active service in some life occupation. What, then, is the natural conclusion to be reached regarding the education of the high school boy and girl? It would seem there can be but one answer, viz: give each individual the broadest possible education in the high school to fit him for the largest possible service in the community in which he is to live. To do this we must work on the theory that few if any high school boys, in at least the early high school period, are capable of determining what their calling in life will be. Assuming this to be true, the logical thing to do in outlining high school courses of study is to place in every course as many of the liberal or nonvocational studies as possible, together with those which may be classed as vocational. This plan operates to afford for each individual student the means of selecting, before he reaches his senior high school year, his chosen *profession* or *vocation*.

If there is any *particular* place in the school process where pupils should be able to discover themselves, it is in the high school. As a rule, an individual is old enough upon leaving the high school to know what his real desire is concerning a future occupation. The high school work, therefore, should be so general

in its scope and yet so definite in its character as regards any particular course, that the average boy finds himself before he finishes his junior high school year, if possible. His senior high school year should be used particularly to fit him either for active life work or college work.

Now it is my purpose to give an opinion upon the work of high school manual arts to make it more completely serve as a preparation for the industries.

Specialization in the High School

Possibly we may be led to believe three things:

First: The manual arts work of the first two years of high school should be both cultural and industrial in character and represent as many fundamental mechanical activities as possible. It should be taken by all students. For those who must leave early to go to work there must be the opportunity for specialization.

Second: The manual arts of the last two years, or at least the last year, of high school should be specifically industrial in character and should be designed to serve particularly the needs of those who will enter vocational service on leaving the high school.

Third: For those students who will enter college the manual arts work of the last two years of high school is not important. Other subjects in the high school curriculum are more valuable as a preparation for college work.

We will consider specifically, now, the things which the high school may do to provide for the industries and discover, if possible, if our three findings just enumerated are sound.

Let us organize our high schools on much the same basis as they are at present organized except that instead of considering the four years as a preparation for some further work we make the preparatory period run through the first two or three years only. During these years in the manual training and drawing work we will give the several subjects as broad an educational value as possible but at the same time have them so thoroughly industrialized that they will represent *precisely* the existing industrial conditions. By so doing, pupils will become acquainted with actual conditions and appreciate in a measure what their future work will be, should they select as their chosen field any one represented by the school courses.

Now, in the fourth year, we will in a sense segregate those who will continue school work in colleges from those who will im-

mediately enter the industries upon their completion of the high school course.

To this section in the senior year we will give a special course in the vocation to be followed in life. If it is pattern making, allow the boy to major, as we say in the university, in this subject. If the textile industry is his selection, let us be sure that the high school offers facilities in this field comparable with those of the industry. But in addition to the special line of work chosen we will give the pupil the advantage of the English, mathematics, history, and science which will help him *most* in his future competition with others who are also textile industry workers but who have not had the advantage of the liberalizing influences of the school.

It is possible that we shall be agreed upon the general contents of this thesis, but those of you who are school administrative officers will possibly criticise it on the ground of its being impossible from the standpoint of administration. For such I suggest this as a solution:

The Co-operative Plan

Permit the high school to coöperate with the manufactories and industrial establishments of the community, the school to continue to be the adjudicator of the academic work and the factory to supply the industrial conditions and adjust itself somewhat to the conditions of those of school age.

Both at Fitchburg and Beverly, Mass., the coöperative plan is followed but there is this difference in its operation. In Fitchburg, the industrial work is done on alternate weeks in factories where a shop man acts as the teacher of the class from the high school. In Beverly the week about scheme is followed but here an instructor in the high school is the instructor in the shop. He works upon shop projects and under shop conditions but he knows school conditions as well, and because of his knowledge of the limitations of boys he is able, doubtless, to serve them better than can the shop man. Then, too, he is a teacher and the shop man may not be. Again as he is in the shop one week and in the school the next he can effect a coöperation which otherwise is impossible. It may be said, too, that his influence over boys of school age is likely to be better than that of the man whose speech and actions suggest the social limitations of average shop conditions.

The Circuit Plan

A second solution is this:—

Organize within the small high school manual training and industrial work which shall be guided by some large centre; a normal school, a large high school, or the university. Let the director in this centre coöperate both with the local school board and with the industries of the community in determining the kind of work to be introduced. Select some individual who will be competent to teach the course outlined and give him a circuit in which he will have a sufficient number of schools to occupy his time. It seems to me that this plan should be much more feasible than the one which necessitates the manual arts work of the pupil to be done in a factory, because it provides for a more general supervision and a control by several interests instead of one; also, because the instructor would, in all probability, be selected partially because of his knowledge of school conditions, whereas the factory instruction is likely to be given by a factory operative or an individual who will be unable to see the large problem and coördinate the work of the shop with that of the school.

A Necessity in Either Plan

However this may be, one feature of either of the two plans suggested should be emphasized as imperative, viz: Put the special work followed by the pupil in his senior year under the supervision of the leaders in the industry represented. I do not believe we shall ever get industrial conditions to obtain in the school if school men are permitted to organize the work of industrial courses, unless they have had the special industrial training needed. On the other hand, I maintain that the executive heads in the school system must remain in general control. Germany and England give us our best illustration of what can be done in this direction—by demonstrating the sanest kind of coöperation between the school and the industrial leaders.

General Summary

Allow me just a closing word in summarizing the four most important points which I have endeavored to make in this paper:

First: Lower grade hand work should be given a prominent place in the curriculum but it should represent community activities and therefore must have an industrial significance.

Second: An intermediate school to provide for those in the seventh and eighth grades who now take advantage of their first opportunity to leave school—the time when the state ceases to compel them to attend school,—should be established.

Third: Organize one or more general high schools in a community, instead of two or three special high schools. In this school during the first three years, compel all pupils to take at least a minimum amount of manual work which is both good manual training and good industrial work. Also provide for specialization along industrial lines in the fourth year.

Fourth: In case the *general* high school organization is not feasible or possible, provide for specialization in industrial work by a school-factory coöperation or by the circuit instructional method wherein supervision will be obtained from recognized authorities representing both the school and industrial interests, and make provision for maintenance through an educational extension department.

In no sense have I intentionally made an arraignment against industrial education or the Wisconsin Industrial Education Law. The schools which will be established under this law will serve a great need. They may be necessary also to arouse public school teachers and show them the opportunities afforded by present school machinery to serve similar or even the same ends that these new schools will have. This paper was designed to make an appeal in this direction.

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